

High Performance School Buildings

Kentucky Department of Education



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Facilities Branch**

High Performance School Buildings

Kentucky Department of Education



**“We can’t solve problems by
using the same kind of thinking
we used when we created them.”**

Albert Einstein

KRS 45A.351

KRS 45A.351 Declaration of public policy on preservation of Commonwealth's natural resources through energy efficiency.

Recognizing the need in the Commonwealth to preserve to the greatest extent possible natural resources within the Commonwealth which produce energy for the citizens, businesses, schools, and governments within the Commonwealth, it shall be the policy of the Commonwealth to preserve these natural resources by maximizing the use of energy efficiency measures in the construction, renovation, and maintenance of buildings owned by local public agencies and to encourage local public agencies to incorporate cost-effective energy efficiency measures into their buildings.

Effective: July 15, 1996

KRS 157.450

KRS 157.450 and 157.455.

It is the intent of KRS 157.450 and 157.455 to:

- (1) Support the construction of new school buildings and the renovation of existing school buildings in a manner that will create a healthy environment for students and teachers while saving energy, resources, and operational expenses; and
- (2) Encourage the use of a life-cycle cost, holistic approach to building design that considers school design, construction, operation, and maintenance in the initial decision-making process.

Effective: July 15, 2010

KRS 157.455

157.455 Definitions

(1) As used in this section:

(a) "Life-cycle cost analysis" means to calculate and compare different building designs to identify which is the best investment over the long term. Life-cycle costs include:

- design and construction costs,
- operating costs,
- maintenance costs,
- and repair and replacement costs, adjusted for the time value of money;

KRS 157.455 Cont.

(b) "Net zero building" means a building in which the amount of energy provided by on-site renewable energy sources is equal to the amount of energy used by the building;

- SOLAR
- WIND
- WATER
- Geothermal
- Biomass

KRS 157.455 Cont.

(c) "Efficient school design" means a school building design:

1. That meets, at a minimum, the requirements of the United States Green Building Council's Leadership in Energy and Environmental Design (LEED) for schools at the "Certified" level or certification under a comparable system with equivalent requirements or other building performance certification systems, such as the United States Department of Energy's Energy Star program;
2. That ensures energy savings from a building design that equates to or exceeds ten percent (10%) over the ASHRAE (American Society of Heating, Refrigerating, and Air Conditioning Engineers) energy standard 90.1-2007; and
3. For which whole building life-cycle cost analysis illustrates that the design is cost-effective.

KRS 157.455 Cont.

(2) The General Assembly hereby finds that schools that are constructed or renovated using efficient school design are proven effective vehicles for accomplishing some or all of the following beneficial public purposes:

- (a) Lower operating costs and increased asset value;
- (b) Reduced waste sent to landfills;
- (c) Conservation of energy and water;
- (d) Reduced storm drainage runoff;
- (e) Healthier, safer environments for occupants;
- (f) Reduced emissions of greenhouse gases; and

KRS 157.455 Cont.

(g) Improved student attendance and performance by:

1. Using the building as a teaching tool;
2. Using the local environment as a context for curriculum integration;
3. Providing rigorous, highly relevant, and applied learning; and
4. Improving productivity by making buildings healthier for occupants, especially through the increased use of natural light.

KRS 157.455 Cont.

(3) The Kentucky Department of Education and all school districts undertaking the construction of new school buildings or the major renovation of existing school buildings are strongly encouraged to:

- (a) Meet or exceed efficient school design standards in planning and designing all new buildings and major renovation projects;
- (b) Use life-cycle cost analysis to evaluate different design proposals; and
- (c) Consider the possibility that each new school building or major renovation of a building could be a net zero building, either during the construction or renovation, or at a later date as resources become available.

KRS 157.455 Cont.

(4) (a) The Kentucky efficient school design trust fund is hereby created as a restricted account to be administered by the Department of Education.

(b) The account may receive contributions, gifts, donations, appropriations, and any other moneys made available for the account. Notwithstanding KRS 45.229, any moneys remaining in the account at the close of a fiscal year shall not lapse, but shall be carried forward into the succeeding fiscal year to be used for the purposes set forth in this section. Interest on moneys in the account shall accrue to the account.

(c) Moneys in the account shall be used to offset the initial additional cost, if any, associated with the construction or renovation of school buildings using efficient school design.

(d) The Kentucky Board of Education shall promulgate administrative regulations pursuant to KRS Chapter 13A to prescribe how a local school district may qualify for and use funds from the account created by this subsection.

KRS 157.455 Cont.

(5) The Department of Education shall develop and adopt **guidelines** for efficient school design, net zero buildings, and life-cycle cost analysis, including the identification of appropriate computer-based simulation programs for use in undertaking life-cycle cost analysis.

Tentative Guidelines:

- Thermal Envelope
- Energy Star
- ASHRAE 90.1
- LEED – Indoor Air Quality – IAQ

KRS 157.455 Cont.

(6) The Department of Education and the Department for Energy Development and Independence shall assist school districts in:

- (a) Developing methods for measuring ongoing operating savings resulting from the use of efficient school design;
- (b) Identifying sources for training for school staff and students to ensure that efficient school design features and components are fully utilized; and
- (c) Identifying ways that efficient school design and its energy-saving components can be integrated into the school curriculum.

S. E. M. P.

KRS 157.455 Cont.

(7) The Department of Education and the Department for Energy Development and Independence shall, by November 1, 2010, and each year thereafter, for the fiscal year ending on June 30 of that year, prepare a report that shall be submitted to the Legislative Research Commission and the Governor. The report shall address new school buildings or building renovations and shall include but not be limited to the following:

KRS 157.455 Cont.

- (a) An assessment of the implementation of efficient school design within Kentucky's education system;
- (b) Documented energy savings from any buildings built using efficient school design or net zero school buildings in operation;
- (c) A list of the new or renovated school buildings completed or identified for future construction during the prior year using efficient school design, including the name of the school district, name of the school, total project cost, additional cost or savings, if any, associated with efficient school design features, and efficient school design features included in the project;

KRS 157.455 Cont.

- (d) A list of all school buildings that operate as a net zero building, and school buildings which school districts plan to convert to net zero. The list shall include the name of the school district, the name of the school, the total cost associated with the school building becoming a net zero building, and the components that will be installed to make the building a net zero building;
- (e) Any recommendations relating to efficient school design; and
- (f) A list of new school buildings completed during the prior year without using efficient school design and an explanation of why efficient school design was not used.

Effective: July 15, 2010

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|---|-----------|----------|--------------|--------|-----------|--------|------------|-------------|--------------------|-------------------------|---|------------|-----------------|---|---------------------------|---------------------|--|
| November 30, 2010 FY 2010 - 2011 | | | | | | | | | | DRAFT | | | | | | | |
| Efficient School Design Within Kentucky Department of Education | | | | | | | | | | | | | | | | | |
| GENERAL INFORMATION | | | | | | | | | | EFFICIENT SCHOOL DESIGN | | | | | | | |
| BGE# | District | Facility | New Bldg Y/N | Area | Ren . Y/N | Area | Start Date | Compl. Date | Total Project Cost | EFF. Design Y / N | Cost Assoc. w/ Efficient School Design Features | LEED Level | Energy Star Y/N | Energy Savings > 10% ASHRAE 90.1 (2007) | Life Cycle Cost Anal. Y/N | Targeted KBTU/sq ft | |
| 10-211 | Adair Co. | Adair HS | Y | 33,000 | | 33,000 | 11/3/10 | 11/3/10 | \$2,000,000 | N | N | G | N | 50 | Y | 50 | |
| | | | | | | | | | | | | | | | | | |
| Note: * If No/ - Provide Explanation in Remarks Section | | | | | | | | | | | | | | | | | |

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EFFICIENT SCHOOL DESIGN FEATURES

[illegible]

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|---|-----------|----------|--------------|--------|-----------|--------|------------|-------------|--------------------|-----------------|--------------------|-------------------------------------|---------------------------------|
| November 30, 2010 FY 2010 - 2011 | | | | | | | | | | DRAFT | | | |
| Efficient School Design Within Kentucky Department of Education | | | | | | | | | | | | | |
| GENERAL INFORMATION | | | | | | | | | | NET ZERO STATUS | | | |
| BGE# | District | Facility | New Bldg Y/N | Area | Ren - Y/N | Area | Start Date | Compl. Date | Total Project Cost | Net Zero Y/N | Net Zero Ready Y/N | Components Req'd to Become Net Zero | Cost To Achieve Net Zero Status |
| 10-211 | Adair Co. | Adair HS | Y | 33,000 | | 33,000 | 11/3/10 | 11/3/10 | \$2,000,000 | N | | PV | \$10,572 |
| | | | | | | | | | | | | | |
| Note: " " If 'No' - Provide Explanation in Remarks Section | | | | | | | | | | | | | |

| November 30, 2010 FY 2010 - 2011 | | | | | | | | | | DRAFT | | | | |
|---|-----------|----------|--------------|--------|---------|--------|------------|-------------|--------------------|--------------------|---------------------|---------------------------|--|----------|
| Efficient School Design Within Kentucky Department of Education | | | | | | | | | | | | | | |
| GENERAL INFORMATION | | | | | | | | | | REPORTING | | | | COMMENTS |
| BG# | District | Facility | New Bldg Y/N | Area | Ren Y/N | Area | Start Date | Compl. Date | Total Project Cost | Actual KBTU/s f/yr | Actual vs. Target % | Training Staff Stds | | |
| 10-211 | Adair Co. | Adair HS | Y | 33,000 | | 33,000 | 11/3/10 | 11/3/10 | \$2,000,000 | 44 | 44.00% | | | Y |
| | | | | | | | | | | | | | | Y |
| | | | | | | | | | | | | | | |
| Note: * If 'No' - Provide Explanation in Remarks Section | | | | | | | | | | | | | | |

Thank You for Your Participation in School Energy Management

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